

Rowe (J.)
K.

3

LETTERS

RELATIVE TO

SOCIETIES

FOR THE

BENEFIT

OF

WIDOWS

AND OF

A G E.

EXETER:

PRINTED BY B. THORN:

And Sold by Him, and E. SCORE, in EXETER;

And by B. LAW, in Ave-Mary-Lane, and J. JOHNSON, in
St. Paul's Church-Yard, LONDON.

M.DCC.LXXVI.

P R E F A C E

THESE Letters first appeared in the GAZETTER in the Years 1767 and 1768. They are now re-published together at the instance of some Gentlemen, by the Author of N^o. 1, 2, 8, 11, 13, and 14.

He hopes, N^o. 11 sufficiently shews his disapproving the Method of treating the Subject of Annuities independent of the consideration of Money. The



* The Author lived in Throgmorton-Street, London, from February 15th 1752, to May 13th 1768. J.R.

At the time he printed London, which was in May 1768, he did intend to write, as large, on the various Societies, then subsisting, for the benefit of Widows and of Age. But, his very able Friend, the Reverend Dr. Price, having copiously, and with great judgment, handled these subjects, in his excellent Treatise, first published in the Year 1771. He, therefore, now declines his

General design.

Printed by J. R. 1776

P R E F A C E.

THESE Letters first appeared in the GAZETTEER in the Years 1767 and 1768. They are now re-published together, at the instance of some Gentlemen, by the Author of N°. 1, 5, 8, 11, 13, and 14.

HE hopes, N°. 11 sufficiently shews his disapproving the Method of treating the Subject of Annuities independent of the consideration of the interest of Money. The fallacy of the Method is, indeed, mathematically demonstrable. Some of these Letters, therefore, he cannot approve; though they could not, with propriety, but be inserted.

THE *Tables* from which his *Calculations* were made, are those of his late celebrated Friend, Mr. SIMPSON, in his *Select Exercises*, p. 254, *et Seq.*

AT the time he quitted *London*,^{*} which was in *May* 1768, he did intend to write, at large, on the various Societies, then subsisting, for the benefit of Widows and of Age: But, his very able Friend, the Reverend Dr. PRICE, having copiously, and with great judgment, handled these Subjects, in his excellent Treatise, first published in the Year 1771; He, therefore, now declines his then General design.

JOHN ROWE.

EXETER,
Jan. 8, 1776.

P. S.

P. S. Dr Price's Book,*— though it be copious, and written with great judgment,— is not so full and complete as to render This Publication unnecessary.

Indeed,— as the Doctor, in his Book, has passed over these Letters unnoticed,— One would suppose that, they escaped his Observation, or that, at the Time of their first appearance, the Gazetteer was a Paper he did not frequently read.

The Doctor, speaking of the Law Society, says, "the Directors resolved to ask the opinion and advice of three gentlemen†, well known for their skill in calculation: This occasioned a further reference to Me". — Now, no reference was made to Him by the Directors; but, his opinion was privately asked by the Projector.

Nov. 11. 1776.

J. R.

* *Observations on Reversionary Payments?*

† Robert Montague, Esq; M^r Joseph Waugh, and J. R.

(1)
No. I.*

To the PRINTER of the GAZETTEER.

ABOUT two years ago, a scheme was proposed for gentlemen of the *Law* to enter into a *Society* for the benefit of their *Widows*; and, after some meetings, a deed of settlement for that purpose was inrolled in the High Court of Chancery.

By the said deed it appears, That no person shall be allowed to enter himself a member, who is under the age of 25, or above the age of 55: That those of the

		£. s.			
Age of {	25	}	shall pay an annual premium of	3	3
	30			3	9
	35			3	19
	40			5	0
	45			6	10
	50			8	9
	55			10	10
				} when their wives are of the same age :	

That, on entrance, every member shall pay a fine of five guineas, and the first annual premium: That every subsequent premium shall be paid at the beginning of the year, to be reckon'd from the time of his commencing a member: That if a member die within a year after his admission, or before a second premium is due, the widow shall not be entitled to the annuity: That the said annuity shall be Fifty Pounds per annum: and, That, if the widow marries, her annuity shall cease.

The directors appointed were, the present Lord Chancellor, three Judges, the Attorney and Solicitor Generals, three Serjeants at Law,

* By J. Rowe.

Law, and fifteen other Gentlemen eminent in the Law profession.

This Society was designed to extend to every part of the kingdom; and printed copies of the rules having accordingly been sent to distant cities, towns, &c. and daily enquiry being now made thereupon, relating to the said Society; it is thought proper to inform the public, thro' the channel of your paper, That, at a meeting of the Directors, held in May 1766, a reference was made to some gentlemen skilled in calculations of this kind, in order to obtain full satisfaction, whether the premiums proposed in the rules would be sufficient to establish the Society on a lasting foundation: and, That, in consequence of the said reference, the following Report was made, and the Society dissolved.

The publication of this extract from the deed of settlement, with the report, will, probably, be of great service to the public in general; as it may be a means of preventing future societies from falling into the like mistakes with those of the said late intended Law Society.

The R E P O R T.

"To the Directors of the Law Society for the Benefit of Widows.
SIRS,

I have fully considered the matter of your reference of May the 7th, touching the truth of the calculations upon which your Society is proposed to be established; and, I am of opinion, it will not be fixed on a permanent foundation, if the annual premiums be less than those expressed in the following Table. I am, with great deference,

T. Brogmoitaur Senat;
(No. 25.)

August 11, 1766.

SIRS,
Your most obedient servant,
JOHN ROWE.

The Widow's Annuity 50 £.—Fine 5 £. 5 s.—Interest
3 per Cent.—London Bills of Mortality.

1st Column, Age of the Man ; 2d, Age of the Woman ;
3d, The Premium required.

M	W	P	M	W	P	M	W	P
	£.	s.		£.	s.		£.	s.
25	25	16	36	36	19	47	47	21
21	18		32	20	18	43	23	2
26	26	16	37	37	19	48	48	21
22	18	3	33	21	3	44	23	4
27	27	17	38	38	20	49	49	21
23	18	6	34	21	7	45	23	6
28	28	17	39	39	20	50	50	22
24	18	10	35	21	13	46	23	9
29	29	17	40	40	20	51	51	22
25	18	15	36	21	19	47	23	14
30	30	17	41	41	20	52	52	22
26	19	1	37	22	3	48	24	4
31	31	18	42	42	20	53	53	22
27	19	7	38	22	7	49	24	6
32	32	18	43	43	21	54	54	22
28	19	13	39	22	11	50	24	12
33	33	18	44	44	21	55	55	22
29	19	19	40	22	15	51	24	18
34	34	19	45	45	21			
30	20	5	41	22	18			
35	35	19	46	46	21			
31	20	12	42	23				

Note. It is evident, the fine, and present value of all the
annual payments expected to be made by the husband, during
the joint lives of himself and his wife, must be equal to the
present

present value of the wife's *chance*, or, of her annuity in expectation; which *chance*, when their lives are of equal value, it is plain, must be just *half* the value of an annuity to be paid *absolutely*, after their joint lives, to the *longest* liver; the chance of the wife's dying before the husband being equal to that of the husband's dying before the wife.— It is likewise evident, on the least consideration, that the value of the said *chance*, or, of the wife's expectation, may be found, when the lives are equal, by subtracting from *half* the value of the *longest* liver *half* the value of the joint lives; or, whether the lives be equal or unequal, by subtracting the value of the joint lives from that of the wife or life *fixed* upon, or life in expectation. Therefore, if from the result we subtract the fine, and divide the remainder by the number expressing the years value of the joint lives, it is plain the quotient will be the premium, or annual payment, to be made by the husband. But, note, in calculations of this kind, the payments are supposed to be made at the *end* of the year; whereas, in this Society, the case is different; for which, and some other things, allowance is made in the table above.

JOHN ROWE.

SOCIETIES, for the benefit of *widows*, when settled on solid foundations, are very beneficial; but, when otherwise, the Consequence, in time, will be fatal to many.

I am, Sir, yours, &c.

Dec. 1, 1767. *Pro BONO PUBLICO.*

1767.

Inserted Dec. 31.

being

B

No. II.

No. II.*

To the PRINTER of the GAZETTEER.

SEEING in your paper of Thursday last, (No. I.) Mr. ROWE's Tables for ascertaining what annual premiums husbands of the several given ages therein specified ought to pay in order to entitle their *widows* to an annuity of 50 £. during the remainder of their lives; I cannot say but that I was greatly amazed at the infatuation that must certainly possess those calculators of the *five guinea per ann. premium societies*,† who almost daily publish their random calculations in the news-papers, where they propose the most enormous annuities for so small a premium. I therefore had the curiosity to try if some of the calculations set forth in Mr. ROWE's tables were exact; which I proved by Mr. WEBB's *complete annuitant*, whose tables being the most modern, and calculated to the preciseness of three places of decimals, I gave them the preference; therefore, for the satisfaction and information of some of your readers, shall give the first calculation for two lives of 25 years each.

	Yrs.	
A single Life of 25 years is worth	15.936	
The two joint lives - - - -	11.519	subtract
	<hr/>	
	4.417	remainder,

being

* By B. Webb. B

† N. 3.

being the value of the wife's reversion; and this multiplied by the annuity of 50*l.* the produce is 220*l.* 17*s.* From this subtract the fine 5*l.* 5*s.* the remainder is 215*l.* 12*s.* and this divided by the joint continuance, 11.519, the quotient is 18*l.* 14*s.* 4*d.* But seeing the first year's premium and fine are paid down, and in case the husband should die within the year, or before he pays his second premium, the money will be sunk, and the widow entitled to no benefit; therefore the said 18*l.* 14*s.* 4*d.* being deducted from 215*l.* 12*s.* and that remainder being divided by 11.519, the quotient is 17*l.* 2*s.*; and this last sum diminished by the probability that a life of 25 years lives one year longer; which, from WEBB's tables of observations, is 440,448, reduces the said sum to 16*l.* 15*s.* 11*d.*; which is the same as in Mr. ROWE's tables. I would therefore,

Mr. Printer, recommend it to those Societies, to consult such gentlemen who are versed in computations of this nature, before they, for the future, engage in undertakings, which have neither reason nor calculation for their

the real state of that society as public
 (2) NEWSPAPERS
 country have been endeavoured to be made by
 those letters.

1768

B 2

No. III.

Inserted Jan. 2. 1768.

No. III.*

To the PRINTER of the GAZETTEER.

AS a member of a Society truly laudable in its intentions, and hitherto conducted by the directors in a very laudable manner, and much to the satisfaction of the parties concerned; I think it not improper to take some notice of two letters, which appeared in your paper the week before last; I mean the letter of Thursday (No. 1.), with Mr. ROWE'S calculation for the intended *Law Society for the benefit of widows*, and the letter of Saturday (No. 2.), (signed with a hard name which I forget), in confirmation of it. *The laudable Society for the benefit of widows, meeting at the Queen's-arms, St. Paul's church yard*, is indeed on too good a footing to be prejudiced by any such attacks; but as it was instituted for general advantage, and a misrepresentation unnoticed may prevent some persons from reaping the benefit proposed for the families of the members; I shall desire by the same channel (your paper), to make the real state of that society as public as the (I hope entirely groundless) doubts of its security have been endeavoured to be made by those letters.

B 2

That

* By... Fisher, Secretary to the *Laudable Society*.

That every thinking man would wish to render the situation of a wife and children as comfortable as he can, in case he should be snatched away before he is able by his industry or fortune to leave them independent of the world, there can be no doubt; and that many a man can, from the profits of his profession or trade, spare a small sum annually, who cannot spare a large sum at once to purchase an annuity for his wife, is equally clear. A man thus disposed, and thus able, will naturally enquire if there is any society or office where he can make this provision for his family; but, if he hears of one, he will very properly enquire whether it is established upon good grounds, that he may not leave his wife in greater distress, by placing a dependance on a fund which is not likely to answer the demands. A society thus well established, and happily confirmed by an experience of SEVEN YEARS, any one thus enquiring may find in that which I have mentioned. Speculative men may indeed raise doubts of the most undoubted matters, and thereby stagger those who either have not ability or leisure to enquire minutely into the truth; but I hope a plain and simple account of facts will carry conviction to any one who may have had scruples arise from what has been asserted by those correspondents of your's; only presuming, that as our annuities advance gradually from 10 *l.* to 40 *l.* per ann. Mr. ROWE's calculations do not apply to us.

This

This Society was established at Lady-day 1761, has been ever since gradually increasing in reputation and numbers, and now consists of more than 400 members. There have only been nine widows claimants since its institution, and two of them are dead. The capital stock amounts to near 10,000 £ . and the annual income, besides casualties, is so considerable, that I hope no man can reasonably doubt of the security for the annuity proposed.

I avoid any comparison between this and other societies, as we want not such assistance; and only write, that none may be prevented, by groundless fears, from adding to his own and his family's happiness, by increasing, at an easy expence, his wife's income in case of his death. I am, &c.

Inverted Jan. 14 5 A. B.

By printed rules of this Society, no one can be admitted a member who is under the age of 21, or above the age of 45. Each Member on his entrance is to pay down $\text{£} 5$. and $\text{£} 5$. yearly, by half yearly payments. The widow of each member, during her widowhood, is entitled to one Annuity payable half yearly as follows, viz. If her husband has been a Member 1 year and a day 10 £ ; if 2 years 15 £ ; if 3 years 20 £ ; if 4 years 25 £ ; if 7 years 30 £ ; if 10 years 35 £ ; and if 13 years 40 £ .

No. IV.

Mr. Rowe's calculations do not apply to us. This

No. IV.*

To the PRINTER of the GAZETTEER.

WHEN a man attempts to advance facts in a public manner, he ought to be well assured of their truth; because, he otherwise lays himself open to a detection which must discredit his veracity.

PRO BONO PUBLICO (No. I.) unfortunately stands in this predicament, as to certain matters, alledged by him to be facts, relative to a Society proposed to be established by the gentlemen of the Law, for the benefit of their widows; for he asserts that the deed of settlement of that society was inrolled in the High Court of Chancery, and that printed copies of the rules were sent to distant cities, towns, &c. both which assertions I aver to be false in fact; the copies so sent being only copies of the original plan or proposals, which were afterwards materially varied. The reference your correspondent mentions, was really made; but the consequences, which he asserts to have resulted from it, are false; for the report made by Mr. Rowe, was made *ex parte*, and not concurred in, or approved of by the two gentlemen who were his coadjutors in that reference: nay, if I am not greatly misinformed, those two gentlemen had, each of them, some very material ob-

* By ... Brown, Projector of the Law Society.

jections to the calculations made by Mr. Rowe; nor could any two of the referees agree upon a proper sett of calculations; for which reason, no Report hath ever been obtained, nor was it thought proper to call a meeting of the Directors to receive the *ex parte* Report made by Mr. Rowe; and therefore it follows, that the dissolution of the society asserted to have been the consequence of that report, is likewise false in fact.

I am sorry to see Mr. Rowe's name made use of in so public a manner by an anonymous writer, without any visible design in so doing. If he means to add any lustre to Mr. Rowe's abilities, in the abstruse doctrine of Chances*, &c. he might have been more successful, by publishing an extract from some of those treatises which Mr. Rowe hath written on that subject, than by holding up to public view, a single and objectionable Report, made upon a private reference: But if it was the writer's intention to throw any slur upon the character of the gentleman who first projected the law society, he is equally unsuccessful in that respect also: I know that gentleman well, and that the project proceeded more from the goodness of his heart, than from his abilities as a calculator. I know also, that the calculations which he made were framed upon the principles of *De Moivre*, and other au-

* Fluxions.

thors on that subject, whose opinions are verified by the flourishing state of a similar society,† established in this metropolis upon the same principles; and that, if in any thing he erred, it was in the amount of the annuity. I know likewise, that this gentleman had not the least lucrative design in what he did; that he publicly offered to serve the Society (*gratis*) in its most troublesome department; and that, in endeavouring to establish a Society for so humane and beneficial a purpose, he expended a very considerable sum of money, *not one farthing of which hath yet ever been reimbursed*: a circumstance which, however, I believe to have rather proceeded from a false delicacy in himself, by neglecting to apply for an indemnification, than to any disinclination in *the very respectable personages* who countenanced his scheme, to contribute thereto; many of whom, I am certain, would be glad to see some method chalked out for that purpose, but more especially

AMICUS.

† No. 3

No. V.

To the PRINTER of the GAZETTEER.

WHEN a man attempts to advance facts in a public manner, he ought to be well assured of their truth; because he otherwise lays himself open to a detection, which must discredit his veracity.

AMICUS, in your paper of yesterday (No. 4) unfortunately stands in this predicament, as to certain matters alledged by him to be facts, relative to a Society proposed to be established by the gentlemen of the law for the benefit of their widows: for he asserts, that no deed of settlement of that Society was inrolled in the High Court of Chancery. Mr. Printer, I sent you a printed sheet of a paper, entitled, "An abstract of the deed of settlement of the law society for the benefit of widows, inrolled in the High Court of Chancery." You therefore, yourself, as well as others, can testify against Him.

The *Report* made by Mr. Rowe, he says, was not approved of by the two other referees, and that they had very material objections to his calculations. This is another false assertion: I appeal to the referees themselves. They were too much engaged in other matters to examine the whole of the calculations, and therefore could not, with propriety, join in the report; but they were fully convinced of the truth of the principles upon which his calculations were made.

C

AMICUS

* By J. Rowe.

AMICUS says, *he knows* the calculations made by the gentleman who first projected the Law Society, were framed upon the principles of *De Moivre*.* What will not *AMICUS* say!

I had no intention either to add lustre to Mr. *Rowe*'s abilities, or to throw a slur on the character of the gentleman who first projected the Law Society. My motive for printing Mr. *Rowe*'s report was, to caution the public from engaging in any future society, which may be built on a sandy foundation.

As *AMICUS* has disputed my veracity, I hope you will not refuse to give my defence a place in your paper; especially as it relates to an affair of great importance to the public.

With regard to your correspondent *A. B.* in your yesterday's paper (No. 3.), I shall only say, in answer to him, that *seven years* are *no trial*; as is well known to all who understand the subject.

PRO BONO PUBLICO.

Jan. 15, 1768.

Inserted Jan. 19.

No. VI.

* Such modern Projectors,—unacquainted with Mathematical principles or the necessary *Præcognita*,—may not, perhaps, improperly be classed with those

Modern 'Pothecaries, who taught the art
By Doctors bills to play the Doctor's part;
Bold in the practice of mistaken rules,
Prescribe, apply, and call their masters fools.

HIV .001

Pope's Crit.

No. VI.*

To the PRINTER of the GAZETTE.

IF you think the following worthy a place in your paper, it is at your service.

A life of 25 years of age has a chance to live 25 years longer; two joint lives of 25 years each, to continue 16 years; the difference of those is due to the longer liver, which suppose to be the wife; then 9 years, at 50 *l.* a year, is 450 *l.* the sum she may receive; but as this must be considered a sum in reversion, the present value of the same, at 3 per cent. is 280 *l.* 8 *s.* 6 *d.*; and this divided by 16, the joint continuance, after deducting the fine, &c. the annual premium is 16 *l.* 16 *s.* 2 *d.* half-yearly payments.

From the above considerations, exclusive of a fine,

Age.	Age.	L.	Annuity,	An.	Prem.
Husband 25, Wife 25, for	10	—	—	3	10
the Husband must pay —	—	—	—	—	—
for	15	—	—	5	5
	20	—	—	7	0
	30	—	—	10	10
	35	—	—	12	5
	40	—	—	14	0
	6	150	6	52	10

The mean Annuity 25 *l.* mean An. Prem.

8 *l.* 15 *s.*

* Refers to

B. WEBB.

No. VII.

To the PRINTER of the GAZETTEER.

IT having been roundly asserted by some pretenders to calculation, that the five guinea per annum premium Society* could establish a sufficient fund to allow an annuity of fifty pounds to the surviving widows of the subscribing husbands, during their natural lives; I shall therefore endeavour to convince those calculators of the absurdity of their assertions. It would be too troublesome for you, Mr. Printer, and would take up more room than your paper could spare, to publish the whole of my calculation; therefore shall only give you the heads of it.

Admit then for 100 persons, annual contributors, at five guineas fine, and five guineas per year; permitting

The first class to consist of 25, whose ages are from 25 to 30 years;

The second class to consist of 30, whose ages are from 30 to 35 years;

The third class to consist of 25, whose ages are from 35 to 40 years;

The fourth class to consist of 20, whose ages are from 40 to 45 years.

Now, the joint continuance of the first class is 125 years;

The

* The laudable Society for the benefit of widows.

(No. 3.)

The joint continuance of the second class is 13 years ;

The joint continuance of the third class is 11.8 years ;

The joint continuance of the fourth class is 10.6 years.

Then, computing interest of money at 3 per cent. compound interest, the amount of the fine and annual premium, will, in 10.6 years, be 1374*l*. when the widows of the fourth class may become claimants. At the term of 11.8 years the society's stock will be 15138*l*. when the widows of the third class become claimants. Again at the period of 13 years, the widows of the second class become claimants ; when the society's stock will be reduced to 1606*l*. and, lastly, at the period of 14.3 years, when the widows of the first class become claimants, there will be a deficiency in the society's stock of 2030*l*.

In the above calculation, all the Widows are supposed to be Survivors ; but if Half the number only had been survivors, then there would have been a discontinuance of Half the premiums ; and those deficiencies being made up, entails a fresh incumbrance on the society : and besides, out of such a number of claimants, some may be expected to live to the extremity of old age. But, as it has been sufficiently shewn, that this society's Fund, on the above principle of calculation, will be

exhausted

exhausted before the younger widows claim; I shall therefore reasonably conclude, that, the annuity granted, is in no manner of proportion to the annual premiums advanced.

BENJAMIN WEBB.

Haberdashers' School,

Bunhill-row,

Feb. 7, 1768.

Inserted Feb. 10, 1768.

No. VIII.

To the PRINTER of the GAZETTEER.

IN all societies for the benefit of widows or of age, it is highly necessary that they should be settled on such principles as will bear the most rigorous examination.

What fatal consequences would have attended the late intended *Law Society* (No. 1.) if it had been carried into execution on the plan proposed by its projector! And, that the *Laudable Society* (No. 3.) in St. Paul's church-yard, is built on a very sandy foundation, the ingenious Mr. Webb has labour'd to shew in your paper of the 11th instant. (No. 7.)

But, my present design of writing, is to open the eyes of another *Laudable Society*,* whose

* The laudable Society of Annuitants for the benefit of age, meeting at the King's-head Tavern, in the Poultry, — instituted in 1766. — The first of the kind in England.

* By J. Rowe.

whole members are to pay different annual premiums, according to their respective ages at the time of admission, until they arrive at the age of fifty; for which each of them; after he attains that age, is to be entitled to an annuity of 50 *l.* per annum, during the remainder of his life.

Now, to find the necessary premiums, or annual payments, let A represent a member of a given age, and B the society. Then, it is plain, the present values of A's and B's expectations must be equal; that is, the present value of all the annual payments A has a chance or may expect to receive of B, must be equal to the present value of all the annual premiums B has a chance or may expect to receive of A.

And, to find the value of A's chance, according to strict mathematical principles; (supposing interest 3 per cent. the age of A at the time of admission 30; and the payments to be at the end of the year;)

From the number of years value which A's life is worth, viz. 45

Subtract the number of years value on the contingency of A's living to the age of 50, viz. 5

And multiply the annuity 50, by the remainder, viz. by - - - - 3. 5.

Then

Then will the product, viz. 175*l.* be the present value of A's chance or expectation; which being equal to the present value of all the annual payments B has a chance or may expect to receive of A; therefore, if this value of A's chance be divided by 11.5, the above number subtracted, we shall have 15*l.* 4*s.* for the annual premium which A ought to pay. ~~I believe~~ But,

If the first premium is to be paid down at the time of A's commencing a member; then, the number of his payments being increased by One, it is plain, 175*l.* divided by 12.5 will give the premium required, viz. 14*l.*

I would willingly shew the necessary premiums to be paid for all other ages: but, this one, I hope, will be sufficient, without taking up more room in your paper.

If you see a Blind-man walking towards a Well, ought you not to caution him of his Danger? I now cry you would a few years before the experience of a few years would any great benefit be derived from any great benefit?

Feb 15. 1768.

Inserted Feb. 23.

The annual premium required by the society for the Age of 30, is said to be 3*l.* 11*s.* 6*d.* and an involuntary mistake in a projected and unacquainted with the necessary principles may plead in extenuation of his fault: But when he is informed that the payments are

No. IX.

To the PRINTER of the GAZETTEER.

BY THE SOCIETY FOR EQUITABLE
ASSURANCES ON LIVES AND
SURVIVORSHIPS.

SINCE the failure of the late intended Law Society, and the establishment of some other societies upon as weak a foundation, some understanding and benevolent gentlemen have used their endeavours to undeceive the multitude; and, by shewing the impracticability of the schemes, to forewarn them of inconveniencies which they do not suspect.

The directors of this society have never deemed the little societies formed out of different branches of their own practice worthy their attention or notice; well knowing that the experience of a few years would open the eyes of the people before any great detriment could ensue; and that experience which is paid for is valued most.

The directors doubt not that most institutions of this sort spring from a motive sufficient to entitle them to the stile of *laudable*: and, an involuntary mistake in a projector unacquainted with the necessary principles, may plead in extenuation of his fault: But, when he is informed that the payments are

too small, and is told and shewn that his project cannot succeed, and yet persists in a design which may seduce the credulous and unwary, his perseverance deserves censure.

But, that innocent and well-meaning persons may not easily be misled for the future, the directors have caused to be inserted in *the account of this Society*, now printing, a number of premiums for several species of assurance on lives and survivorships, by them practised, sufficient to enable those who are unacquainted with calculations of this sort, to see for themselves, and to form a just judgment of any scheme which may be proposed to them hereafter; — to anticipate the fate of many small associations now subsisting, and to say with certainty, whether it is best to sip at a disordered stream, or to drink largely at the purer fountain from which it flows.

By order of the Directors,

JOHN EDWARDS, Actuary.

*From the House of the Society,
in St. Nicholas-lane,*

Feb. 22, 1768.

And entered Feb. 27.

** This, however, was not done.*

J.R.

No. X.

No. X.*

To the PRINTER of the GAZETTEER.

THE terms of admission into the Laudable Society, meeting at the King's-head in the Poultry, are, If for a person of 30 years of age, either male or female, five guineas entrance, or fine, and 3*l.* 19*s.* per annum premium; * which sum differs widely from what *CALCULATOR* makes it out, viz. 15*l.* 4*s.* per annum premium, computing interest of money at 3*l.* per cent. (No. 8.)

Now, Sir, I think *Calculator* is almost as much above as the Society are below the mark: for let it be admitted (without computing any interest of money at all, but simply from a table of the probabilities of life) that a person of the age of 30 years, has a chance to live 22.6 years longer; and a person of the age of 50, to live 15.4 years longer; then, per *Simpson* or *Webb's* table of probabilities, a life of 30 years living 20 years longer, or attaining to the age of 50, must be diminished in the ratio of, according to *Simpson*, in proportion as 301 is to 159; by *Webb*, as 408 is to 215; but as the difference between these two expressions is no more than 157 divided by 122808, it is not worth notice; the same will be reduced to 11.9

D 2

years.

* But 3 guineas fine, and 3*l.* 11*s.* premium.

* By B. Webb.

years. And again, I from 17.4 years, the number of years due to a life of 50, subtract 11.9 years, and the remainder is 5.5 years, the same which *Calculator* brings out, and this multiply'd by 50%, the product is 17.5%. but deduct from this sum the amount of the five guineas fine in 20 years, at 3% per cent. compound interest, the remainder will be 16.14 1/2%, which sum should, in my opinion, be divided by 15.4 years, the number of years a person of 50 may have a chance to live longer, and the quotient will be 10% 1/2. the annual premium a person of 30 years ought to pay the society, to be entitled to a benefit of 50 *l.* annuity for the remainder of his life, after he has attained the age of 50, which sum is 6 *l.* 15 *s.* above what the society requires.

NECROLOGOS.

No. XI.*

To the PRINTER of the GAZETTEER.

NECROLOGOS, in your paper of this day, (No. 10.) seems to be young in the doctrine of Annuities. To learn the true method of finding the present value of an annuity on the life of a man of a given age; and for a limited term of years, on the contingency of

* By J. ROWE.

his

his living that term; I would advise him to consult the author of the *Complete Annuitant*, or to refer to Mr. Simpson's *Annuities on Lives*, p. 69 *et seq.* and then, if he will be at the trouble to calculate the present value of an annuity of 50 *l.* per annum, for a life of 30, he will find the value of the first 20 years expectation to be 575 *l.* for 15 years purchase; and the value of the remainder of the life to be 175 *l.* or 3.5 years purchase; that is, he will find the present value of the whole life's expectation to be 15 years purchase; and that for the limited term of 20 years on the contingency of his living so long, to be 11.5 years purchase. (interest being 3 per cent.)

After he has done this, a little reflection will shew him, that, as the present value of the annuity from the age of 50, or from the 20th term of the series, is 175 *l.* and the present value of the chance or contingency of the life's arriving at the age of 50, is 11.5 years purchase:—I say, a little reflection will shew him, that, he must divide the said 175 *l.* by 11.5, to know the annual premium to be paid by the expectant annuitant; that is, he will find a life of 30 years old, in order to have an annuity of 50 *l.* per annum after he arrives at the age of 50, must pay, till he attains that age, a premium of 15 *l.* 4 *s.* per annum.

If

* Richard against Baxter.

^{or} Benjamin against Webb.

If this Writer appears again in print on the subject; it is hoped he will not be so *lax* in his Reasoning*; but, keep to rigid mathematical principles.— His Method may deceive the *half learned*; but will never be approved of by any-one who understands the Subject.

CALCULATOR.

Ms. 26, v. 68.

No. XII.

To the PRINTER of the GAZETTEER.

HAVING for some time been desirous of belonging to the Laudable Society for the benefit of age, thinking the terms of admission very easy, and hearing at the same time of the largeness of their capital; not willing to rely on my own judgment concerning the permanency of such an institution; I therefore applied to a gentleman well versed in calculations of that nature, who gave me the following calculation for a life of 30, which producing the same answer as *Calculator's*, (No. 8.) I shall take it a favour if you will give it a place in your paper.

His

* The Republisher of these Letters, does not think himself answerable for any false reasoning, or calculation, in either of them, excepting his own.

* By B. Webb.

+ B. Webb.

His calculation is as follows :—
A's (which is a life of 30) he supposes may live twenty-two years and half longer; and that its chance to fail is eleven and nine-tenths, which is found by multiplying 22.5 by 215 divided by 408; 408 being the number of people living at 30 years of age, and 215 the number of people living at 50.†

Now, as A cannot receive any benefit from the Society unless he lives 20 years longer, or attains the age of 50, therefore he subtracts from 20 years the above chance, 11.9, and the remainder is 8.1, which he multiplies by the annuity of 50 *l.* and divides the product by the chance 11.9, and the quotient is 34%. But, as A is not certain to receive the 50 *l.* annuity, according to calculation, during the remainder of the value of his life, should he attain the age of 50; he therefore diminishes the sum 34% in that proportion, viz.* 96,215, which is the chance a life of 50 has to live 16 years longer, and which reduces it, within a trifle, to what Calculator makes it, whose answer is 15 *l.* 4s. the annual premium required, and this is 15 *l.* 3s. 11d.

I am, Sir, &c.

B.

Feb. 26, 1768.

P. S.

† Webb's Tables. The Republic for any 1512 by 66 divided

P. S. If A should live to the age of 50, he will in that time have paid, at 15*l.* 4*s.* per ann. the sum of 304*l.* and if he should live after 50, ten years, he will have received of the society 500*l.* against which there are many chances, for from this method of calculation it is making a life of 30, equal to 32 years and half purchase.

No. XIII.*

To the PRINTER of the GAZETTEER.

BY the Rules of the *Laudable Society of Annuityants for the Benefit of Age*,† meeting at the King's-Head Tavern, in the Poultry, (it is said, that,) a person who enters into it at the age of 40, must pay a fine of 10*l.* and an annual premium during life of 6*l.* 14*s.* the first payment to be made at the time of his commencing a member : for which he is to have, after he arrives at the age of 50, an annuity for life of 50*l.* per annum ; that is, in fact, he is to pay on admission, a fine of 10*l.* and the first of eleven annual premiums at 6*l.* 14*s.* each ; and for it is to have, after he attains the age of 50, an annuity for life of 43*l.* 6*s.*

Now,

* By J. Rowe.

† This Society was Instituted at Christmas 1766.

Now, to shew in a plain and intelligible manner, even to the most common understanding, that the premium is inadequate to the annuity; — Suppose 229 persons, each of the age of 40, to engage at the same time in this Society: Then, by *London* bills of mortality, at the end of one year there will be living of these members 222; at the end of the second 214; the third 206; the fourth 199; the fifth 192; the sixth 185; the seventh 178; the eighth 171; the ninth 165; the tenth 159; the eleventh 153, the twelfth 147; the thirteenth 141; the fourteenth 135; &c. And therefore, the number of premiums paid by them will be 2120, and their amount 14204 *l.* — For, on the *first* day of the

			£.	s.
1st year	229	pay	1534	6
2d	-	-	1487	8
3d	-	-	1433	16
4th	-	-	1380	4
5th	-	-	1333	6
6th	-	-	1286	8
7th	-	-	1239	10
8th	-	-	1192	12
9th	-	-	1145	14
10th	-	-	1105	10
11th	-	-	1065	6

2120

14204 0

Now,

E

Now, to this amount of the premiums, we are to add compound interest for 11 years on what is paid the first year; for 10 years on what is paid the second; for 9 on what is paid the third year; &c.— We are likewise to add 229 fines, at 10*l.* each, with compound interest for 11 years.— And these fines, with all the compound interest, (supposing interest to be 3 per cent.) will amount to 6098*l.* 6*s.*

So that, the whole money arising to the Society from the said 229 members, the day before the annuities are to be paid, will be 20,302*l.* 6*s.*

And now, of these 229 members, there are 153 living, who are to receive, each of them, 43*l.* 6*s.* in all 6,624*l.* 18*s.* which being paid, there will remain in the Society's hand 13,677*l.* 8*s.* to which add one year's interest, and it will be 14,087*l.* 14*s.* out of which there are now 147 members living to receive 43*l.* 6*s.* each, in all 6365*l.* 2*s.* and this being paid, the Society will have remaining 7722*l.* 12*s.* which increased by one year's interest, will be 7954*l.* 5*s.* And now there are living 141 members to receive 43*l.* 6*s.* each, in all 6105*l.* 6*s.* which being paid, the Society's stock will be 1848*l.* 19*s.* to which add one year's interest, and it will be 1904*l.* 8*s.* And now there are living 135 of the said 229 members, who claim 43*l.* 6*s.* each, in all 5845*l.* 10*s.* which is 394*l.* 2*s.* more

more than the Society is capable of paying out of all the money arising from the said 229 members. And before these Claimants are all dead, they will have demands on the Society for 1920 payments more, at 43*l.* 6*s.* each; which, with the 3941*l.* amount to no less than the sum of EIGHTY-SEVEN THOUSAND AND SEVENTY-SEVEN POUNDS!!

I shall only add, that, the premium, instead of 6*l.* 14*s.* should be 31*l.* 5*s.* (supposing interest at 3 per cent.) as may be proved by any-one, who will apply it, in the above plain and intelligible way of proceeding, to the bills of mortality for *London*, as given by the late celebrated Mr. *Simpson*, in his *Select Exercises*, p. 254.

PRO BONO PUBLICO.

March 4, 1768.

Inserted Mar. 8.

No. XIV.*

To the PRINTER of the GAZETTEER.

A Man holds an estate on his own life only. It produces him 20*l.* a year. He has a wife, whose life he would add to it. The age of the man is 40, and the age of the woman 35. Now, supposing interest to be 3 per cent. What sum ought he to pay for adding his wife's life?

The answer to this question, Mr. Printer, will but little differ from the sum a man, aged 40, ought to pay, at once, to a Society

E 2

for

* By J. Howe.

for the benefit of Widows, to entitle his present wife, aged 35, to an annuity of 20*l.* a year after his decease (interest being 3 per cent.).

Now, this sum is found, by subtracting from the present value of the wife's life, the present value of their joint continuance.— (*Simpson's Annuities*, prob. 13.)

And, the present value of the wife's life is 14.1 years purchase, and that of their joint lives 9.4 years purchase: The difference, therefore, 4.7, is the number of years value of the wife's expectation.

So that, 20*l.* multiplied by 4.7, or 94*l.* is the sum required.

IF the man does not pay the whole sum of 94*l.* down, but only 20*l.* of it in part; What sum ought he annually to pay for the remaining 74*l.* during the uncertain number of years both he and his wife shall live; that is, during their joint continuance; the first payment to be immediately made?


In calculating the present value of an annuity, the annual payments are supposed to be made at the *end* of the year: And, as the present value of these joint lives, on *that* supposition, is 9.4 years purchase; so their said value in the *present* case, must evidently be 10.4 years purchase: And therefore, if we divide the 74*l.* by 10.4, we shall have 7*l.* 2*s.* for the answer to the question proposed.

SUP.

SUPPOSING the widow not to be entitled to the annuity if the husband die within the term of *five years* next after his being admitted a member : — Then, the *whole sum* to be paid at *once*, instead of 94 *l.* will be but [#]56 *l.* And therefore, if we divide 56 *l.* by 10.4, we shall find the necessary *annual payment* to be made by the husband to be but 5 *l.* 7 *s.* 6 *d.**

CALCULATOR.

April 30, 1768.

 In the *laudable society of annuitants* for the benefit of age, meeting at the King's-head Tavern in the Poultry, the eleven premiums to be paid for the age of 40, being but 6 *l.* 14 *s.* each; the *fine*, instead of 10 *l.* should be 209 *l.* — See *Pro Bono Publico*, in your paper of the 8th ult. (No. 13.)

The TERMS of this Society have daily been varied; — But, — when will they be varied ENOUGH! —

They seem, indeed, to be intended
For nothing else than to be *mended*.

But. Hudib.

* If the annual payment made by the husband be 40 *s.* and the first be at the time of his admission into the Society; then, the annuity to be paid to the widow, by *London tables*, should

For, at the end of 5 years, when the woman's age ^{be} will

be 7*l.* 9*s.* but, by *Country* tables, 7*l.* 14*s.*—Supposing interest 3 per cent, and the widow not to be entitled to the annuity if the husband die within 5 years after his being admitted a member.

The republisher of these Letters, hopes, serious attention will be given to *this*, by the many Societies for the benefit of *widows* lately established throughout the Kingdom in general; and by those in the city of *Exeter* and county of *Devon* in particular.

He reflects on no-one; but hopes, and believes, these Societies took their Origin from motives truly laudable and good.—And, he would hope and believe the same good motives will soon cause a *Reformation*.

☞ These Societies, instead of 7*l.* 9*s.* or 7*l.* 14*s.* engage to pay the Widow 20*l.*!—What fatal consequences must *such* Societies in time produce! — Ought they not immediately to REFORM!

will be 40 and the man's 45, the value of her Expectation, instead of 4.7 years, will be but 4.5 years purchase; the present value of which is 3.88 years purchase. Now, the Chance, or Probability, that they shall be both alive at the end of 5 years is $\frac{229}{266} \times \frac{192}{229}$, or $\frac{192}{266}$; which, therefore, being multiplied by 3.88, makes the present value of her Expectation equal to 2.8 years purchase, or 56*l.*
J.R.

No. XV.

POSTSCRIPT.

IF by the RULES of a *laudable society of annuitants for the benefit of age*, a person who enters into it at the age

of $\left\{ \begin{array}{l} 25 \\ 30 \\ 35 \\ 40 \end{array} \right\}$ is annually to pay $\left\{ \begin{array}{l} \text{£.} \quad \text{s.} \\ 2 \quad 15 \\ 3 \quad 11 \\ 4 \quad 17 \\ 6 \quad 14 \end{array} \right\}$ until he arrives at the age of 50;

the first payment to be made at the time of his being admitted a member; and is likewise to pay down a fine, then to be agreed on: And, that, after he attains that age, he shall be entitled to an annuity for life of 24*l.* a year: Quære, What ought the respective fines to be for the ages 25, 30, 35, and 40? — supposing interest to be 3 per cent.

The *fine*, for either age, is thus found: — From the number expressing the years value of the member or life in expectation, subtract the number expressing the years value on the contingency of his arriving at the age of 50; multiply the annuity 24*l.* by the remainder: Then will the product be the present value of the life's expectation, or, of his interest in the Society. (See No. 8.) —

Multiply

Multiply the annual payment, or premium, made by the member, by the said number (increased by *unity*) expressing the years value on the contingency of his living to the age of 50; and subtract the product from the said value of the member's expectation, or, of his interest in the Society: Then will the remainder be the fine required.

Hence, by *London* bills of mortality, the fine for the age of 25, is found to be 25 *l.*; for the age of 30, 40 *l.*; for the age of 35, 60 *l.*; and for the age of 40, 92 *l.*— But, by *Country* bills, the fine for the age of 25 should be 43 *l.*; for the age of 30, 60 *l.*; for the age of 35, 82 *l.*; and for the age of 40, 117 *l.*

✍ If such a Society as this, had been instituted in the year 1766; and the various *fin*es paid by the several members of different ages admitted into it from that time to this, had been, one with another, not above one-fourth part of what they ought to have been; particularly at and about the time of its institution: — Then, though the surviving members, or those now living, were to make good their *own* deficiencies; — which equity would require; — and though no-one were to be hereafter admitted a member, without paying the necessary fine above required: Yet,

Yet, even then, the Society, by means of the *very small fines* paid by those members who are dead, could not properly, strictly, and truly be said, to be now so thoroughly reformed as to be established on a firm and solid foundation.*

However, *The laudable society of annuitants for the benefit of age*, (No. 8, 13.) having lately† examined minutely into the state of their affairs, and reduced the annuity to 24*l.* a year; it is *hoped* — not *believed* — that Society now rests on a **Basis**, solid, permanent, and secure.

JOHN ROWE.

EXETER,
Jan. 8, 1776.

* However trifling this observation to some may appear; yet, he who shall judiciously calculate, will find it not unworthy of notice.

† Nov. 1775.

*** The *laudable Society for the benefit of widows*, (No. 3.) meeting at the Queen's-arms Tavern, in St. Paul's Church-yard,—being convinced of its incapacity to make good its engagements ; — many of its members, like *Gentlemen of Honour*, have endeavoured to procure a *Reformation* : and, for that purpose, applied to *Parliament*, praying, if that could not be effected, that it might be *dissolved*.— See *The Gentleman's Magazine* for July 1775, page 314.

18 AP 68

✎ In ev'ry Work, regard the *Writer's END*,
 Since none can compass more than they intend ;
 And, if the means be just, the conduct true,
 No BLAME, in spite of trivial Faults, is due.

Pope's Crit.

F I N I S.

The Laudable Society of Annu- tants for the benefit of Age,

Was instituted by 13 Persons at Christmas 1766.
— In July 1767 it consisted of 100 Members.—
A Deed of Settlement, dated October 27. 1767,
was enrolled in the High Court of Chancery.
— No Admission Fine was paid by the said
100 Members.— The Fine paid at the Time of
Admission, for the Age of 40, was,
from July 7. 1767 to Jan. 5. 1768, 7 Guineas,
Jan. 5. 1768 . July 5. 1768, 12
July 5. 1768 . Jan. 3. 1769, 20
Jan. 3. 1769 . July 4. 1769, 30
July 4. 1769 . Feb. 13. 1770, 50
Feb. 13. 1770 . July 26. 1770, 70

from July 26. 1770 to Xmas 1774 &c. 100 Guineas.
The Fines for other Ages were in Proportion.*

The clear Annuity was 44 Pounds a year, to be
paid Quarterly: The First Payment not to be
made till Lady-day 1777.— The whole num-
ber of Members admitted, to Christmas 1774,
was 1469;

died 93 }
excluded 44 } 137

The whole number of Members belong- }
ing to the Society at Christmas 1774 } 1332.

— Though the Fines have so often been varied,
yet, the Halfyearly Payments have been always
the same.— The Society's Stock Nov. 4. 1775
was 92800 Pounds.

* The Fines have not been
varied since July 26. 1770.

J. R.
Nov. 11. 1776.

Laudable Society of Annu- tants for the Benefit of Age.

Members admitted,

from Decem. 25. 1766 to July 7. 1767 . . . 100.
July 7. 1767 . . . Jan. 5. 1768 . . . 179.
Jan. 5. 1768 . . . July 5. 1768 . . . 133.
July 5. 1768 . . . Jan. 3. 1769 . . . 145.
Jan. 3. 1769 . . . July 4. 1769 . . . 273.
July 4. 1769 . . . Feb. 13. 1770 . . . 219.
Feb. 13. 1770 . . . July 26. 1770 . . . 190.
July 26. 1770 . . . Dec. 25. 1774 . . . 230.

1469.

The Stock, Dec. 25. 1774 . . . £. 81000.

The Stock Feb. 7. 1776 was . . . £. 95800.

*** At two General Meetings Extraordinary,
held 26th Octob. and 23rd Nov. 1775, it was
agreed and Ordered, That the clear Annuity,
instead of 44^l. should be but 24^l. — That,
such Members as should choose to withdraw
from the Society, should signify it in writing
to the Secretary on or before Lady-day 1776.—
And that, such Members should receive
back the several Sums by them paid, together
with Interest thereof at the Rate of 3^l 6^s 8^d.
Ann.

††† The Stock returned to the Members who
withdrew, was paid between Lady-day and
Midsummer 1776: and is said to be about
£. 20,000.

J. R.
Nov. 11. 1776.

A true and exact Copy of

"A Short Abstract of the Deed of Settlement of the Laudable Society of Annuitants, for the benefit of Age,

(At present) held at the King's Head Tavern in the Poultry.

[The Deed of Settlement of this Society is enrolled in the High Court of Chancery.]

MEMBERS of this Society, being Protestants, when Fifty Years of Age, are entitled to an Annuity of Fifty Pounds per Annum, during Life.

Such Persons, of either Sex, as become Members at Forty Years of Age, or upwards, must continue Members for Ten Years from the time of Entrance, before they are entitled to the said Annuity.

The Executors or Administrators of every Member shall be paid up to the Day of his or her Death.

Every Member shall reside in Great Britain at the time of his or her Admission.

No Attorney or Scrivener shall be admitted a Member of this Society.

Every Member residing above Twenty Miles from London, may empower any One to receive being the Annuity, by proper Certificate, certifying their being alive on the Day the Annuity became due.

Every Member residing within Twenty Miles of London, shall receive the Annuity into their own Hands, unless Sick, lame, or otherwise infirm; and, in such case, shall be subject to the foregoing Article.

The Annuitants to be paid Quarterly.

Every Member shall produce a Certificate, an Affidavit, or an Affirmation, of their Age when required by the Managers (a reasonable Time being allowed for the same) not any Member shall receive the Annuity until such Certificate, Affidavit, or Affirmation, shall be produced.

There

There shall be Two General Meetings of this Society every year; viz. On the Second Tuesday after Christmas and Midsummer Days; Notice of which shall be given in the Publick Papers.

No General Court shall consist of less than Fifty Members.

The General Courts are empowered, by the Deed of Settlement, to choose the Managers and Auditors, and to appoint the Trustees for holding the Capital Stock of this Society.

N.B. The Fund of this Society, at present, is invested in the Bank of England in the Names of Twelve Trustees.

A Table, shewing the Admission Money which must be paid with the first Halfyearly Payment.

Admission Money.		Admission Money.		Halfyearly Payments.		Halfyearly Payments.	
Age.	£. s.	Age.	£. s.	Age.	£. s. d.	Age.	£. s. d.
21	2. 2	38	11. 11	21	1. 3. 3	31	1. 17. 6
to 29		39	12. 12	22	1. 4. 3	32	1. 19. 9
30	3. 3	to 45		23	1. 5. 3	33	2. 2. 3
31	4. 4	46	11. 11	24	1. 6. 3	34	2. 5. 3
32	5. 5	47	10. 10	25	1. 7. 6	35	2. 8. 6
33	6. 6	48	9. 9	26	1. 8. 9	36	2. 12. .
34	7. 7	49	8. 8	27	1. 10. 3	37	2. 16. 3
35	8. 8	50	7. 7	28	1. 11. 9	38	3. 1. 3
36	9. 9	to 59		29	1. 13. 6	39	3. 7. .
37	10. 10			30	1. 15. 6	40	3. 7. .

Every Age after Forty pays the same."

** The above Short Abstract was Printed in the year 1768.

J. R.
Nov. 11. 1776.

Exeter Annuitant Society.*

The First Society in England, for the benefit of Widows, was established at Exeter in the year 1758.

2 The Chief Rules of this Society are, viz.

That, It shall consist of no more than 100 Members.

— That, a Member, at the Time of Admission, may be of any Age, and be either married or single.

— That, each Member shall pay two Guineas a Year; the First payment to be made at the Time of his being admitted. — That, for as many Years as a Member shall be older than his Wife, so many

Guineas He shall pay as a Fine. — That, the Widow's Annuity shall be 20 Pounds.

— That, if a Member shall die within 5 Years after his admission, his Widow shall not be entitled to the Annuity. — That, if a Widow shall

marry, her Annuity shall cease from the Time of her Marriage until she shall become a Widow again.

N. B. In the Year 1770 the Annuity was reduced to 15 Pounds; to be paid at Michaelmas 1771.

* * The Expenses of the Society are about 7 Pounds Ann.

In Nov. 1776 the Stock of the Society was, viz.

In 3^d Cent. Consol. Bank Annuities. . . £. 2850.

In 6 Exeter Turnpike Deeds Poll & 1st Cent. . 300

Balance in the Treasurer's Hand. 22.

3172

The Number of Members then was 97, and the Number of Widows, entitled to the Annuity, 19.

* See p. 34.

The


The Widows' Annuities are always due at Michaelmas, and the Interest and Dividends at Midsummer.

D^r The Treasurer, Gregory Jackson, Esq; C^r

Balance of late Treas ^r . 12. 14.	19 Widows at 15 ^l .. 285.
Interest & Dividends. 97. 10.	Sundry Expenses ... 6. 18.
97 Members at 2 ^l . 2 ^s . 203. 14.	Balance Nov. 1. 1776 ... 22 ...
<u>313. 18.</u>	<u>313. 18.</u>

The Widows' Annuity is not due till the Michaelmas-day Twelvemonth after the Husband's Death.

J.R.
Nov. 11. 1776.

 The Number of Widows expected by the Society: Calculated by M^r W^m Chapple.

A.D. 1763. . . N. 3	A.D. 1780 . . . N. 14	A.D. 1797 . . . N. 20
4 . . . 3	1 . . . 14	8 . . . 20
5 . . . 5	2 . . . 14	9 . . . 20
6 . . . 5	3 . . . 15	18 00 . . . 20
7 . . . 6	4 . . . 15	1 . . . 20
8 . . . 7	5 . . . 16	2 . . . 21
9 . . . 7	6 . . . 16	3 . . . 21
1770 . . . 8	7 . . . 17	4 . . . 21
1 . . . 9	8 . . . 17	5 . . . 21
2 . . . 10	9 . . . 17	6 . . . 21
3 . . . 10	17 90 . . . 18	7 . . . 21
4 . . . 11	1 . . . 18	8 . . . 22
5 . . . 11	2 . . . 18	9 . . . 22
6 . . . 12	3 . . . 19	18 10 . . . 22
7 . . . 13	4 . . . 19	1 . . . 22
8 . . . 13	5 . . . 19	2 . . . 22
9 . . . 14	6 . . . 20	3 . . . 22

A.D.

A.D. 1814. . W. 22	A.D. 1827 . . W. 23	A.D. 1840 . W. 24
5 . . . 22	8 . . . 24	1 . . . 24
6 . . . 22	9 . . . 24	2 . . . 24
7 . . . 23	1830 . . . 24	3 . . . 24
8 . . . 23	1 . . . 24	4 . . . 24
9 . . . 23	2 . . . 24	5 . . . 24
1820 . . . 23	3 . . . 24	6 . . . 24
1 . . . 23	4 . . . 24	7 . . . 24
2 . . . 23	5 . . . 24	8 . . . 24
3 . . . 23	6 . . . 24	9 . . . 24
4 . . . 23	7 . . . 24	1850 . . . 24
5 . . . 23	8 . . . 24	1 . . . 24
6 . . . 23	9 . . . 24	2 . . . 24 or 25
A.D. 1853 . . Widows 25 . . the Maximum.		

This Calculation was made about the end of the year 1763; at which Time there were Three Widows entitled to the Annuity, who were paid it at Michaelmas 1764.

**** My worthy Friend, M^r Chapple, possesses great Abilities, and is a good Mathematician:
 — But, in this Affair, He has greatly erred.
 — He was not the Original Projector; but One of the First Members, and the Principal Institutor of the Society.

The Maximum, or greatest Number of Widows, should have been calculated to be about 50; and to take place about the year 1880.

Wives, in general, are younger than their Husbands. — About Five of the Members are Bachelors.

J.R.

 * M^r Chapple died Sep^r. 1. 1781. Stat. l^a 63.

The Widows' Annuities are always due at Michaelmas, and the Interest and Dividends at Midsummer.


D^r. The Treasurer, Gregory Jackson, Esq; C^r.

Balance of late Treas ^r . 12. 14.	19 Widows at 15 ^l . . . 285.
Interest & Dividends. 97. 10.	Sundry Expenses 6. 18.
97 Members at 2 ^l 2 ^s . 203. 14	Balance Nov. 1. 1776 . . . 22. . .
<u>313. 18.</u>	<u>313. 18.</u>

The Widows' Annuity is not due till the Michaelmas-day Twelvemonth after the Husband's Death.

J. R.

Nov. 11. 1776.

 The Number of Widows expected by the Society: Calculated by M^r W^m Chapple.

A.D. 1763 . . N. 3	A.D. 1780 . . N. 14	A.D. 1797 . . N. 20
1 . . . 3	1 . . . 14	8 . . . 20
2 . . . 5	2 . . . 14	9 . . . 20
3 . . . 5	3 . . . 15	18 00 . . . 20
4 . . . 6	4 . . . 15	1 . . . 20
5 . . . 7	5 . . . 16	2 . . . 21
6 . . . 7	6 . . . 16	3 . . . 21
770 . . . 8	7 . . . 17	4 . . . 21
1 . . . 9	8 . . . 17	5 . . . 21
2 . . . 10	9 . . . 17	6 . . . 21
3 . . . 10	17 90 . . . 18	7 . . . 21
4 . . . 11	1 . . . 18	8 . . . 22
5 . . . 11	2 . . . 18	9 . . . 22
6 . . . 12	3 . . . 19	18 10 . . . 22
7 . . . 13	4 . . . 19	1 . . . 22
8 . . . 13	5 . . . 19	2 . . . 22
9 . . . 14	6 . . . 20	3 . . . 22

A.D.

A.D. 1814.. W. 22	A.D. 1827 .. W. 23	A.D. 1840 .. W. 24
5 ... 22	8 ... 24	1 ... 24
6 ... 22	9 ... 24	2 ... 24
7 ... 23	1830 ... 24	3 ... 24
8 ... 23	1 ... 24	4 ... 24
9 ... 23	2 ... 24	5 ... 24
1820 ... 23	3 ... 24	6 ... 24
1 ... 23	4 ... 24	7 ... 24
2 ... 23	5 ... 24	8 ... 24
3 ... 23	6 ... 24	9 ... 24
4 ... 23	7 ... 24	1850 ... 24
5 ... 23	8 ... 24	1 ... 24
6 ... 23	9 ... 24	2 ... 24 or 25
A.D. 1853 .. Widows 25.. the Maximum.		

This Calculation was made about the end of the Year 1763; at which Time there were Three Widows entitled to the Annuity, who were paid it at Michaelmas 1764.

*** My worthy Friend, M^r Chapple, possesses great Abilities, and is a good Mathematician. But, in this Affair, He has greatly erred. He was not the Original Projector; but One of the first Members, and the Principal Institutor of the Society.*

The Maximum, or greatest Number of Widows, should have been calculated to be about 50; and to take place about the year 1880.

Wives, in general, are younger than their Husbands. About Five of the Members are Bachelors.

J.R.

*** M^r Chapple died Sep^r. 1. 1781. Stat. Inc 63.*

18 AP 68

MONTHLY REVIEW for DEC. 1758.

*An Introduction to the Doctrine of Fluxions. By John Rowe.
The Second Edition, with additions and alterations. 8vo. 4s. 6d.*

THIS Treatise was first published in the year 1751, but no account of it having yet appeared in our Review, we think it incumbent on us to take notice of this new Edition, published in 1757.

The doctrine of fluxions has been taught by various authors; but very few have considered themselves as writing to learners; the highest and most difficult operations have been the principal objects of their attention, while the introductory or fundamental parts have been treated in too concise a manner to be understood by those, who are strangers to this most useful and elegant method of computation. A plain introduction was wanting to lead the young student gradually from the first principles to the more intricate parts of this science, explaining every difficulty, and removing every obstacle that might obstruct his progress: and this is what Mr. Rowe has attempted in the treatise before us. He has explained the new method of algebraical notation, introduced by Dr. Wallis, and used in all fluxionary tracts; with the manner of reducing quantities into infinite series. It must indeed be owned, that these particulars do not immediately relate to the doctrine of fluxions; but as they are absolutely necessary to be known before any progress can be made in fluxionary computations, and not to be found in the common books of algebra, it was certainly right to introduce them here, that nothing might hinder the learner's progress in this delightful, though difficult study.

This treatise is divided into two parts. The first treats of the direct method of fluxions, or that by which we find the fluxion from the generated quantity or fluent being given: and the second, the inverse method, or that wherein, from the fluxion being known, we find the fluent. To this is annexed an Appendix, containing a collection of miscellaneous questions, with their answers, to illustrate the doctrine delivered in this treatise.

In the first part, after explaining what is meant by the terms fluxion, increment, moment, fluent, &c. and the new method of algebraical notation, the author proceeds to shew the method

of

of finding the fluxions of quantities in so plain a manner, that we are persuaded no person, with proper application, can meet with any difficulty in understanding it. The third chapter of this part, treats of the maxima and minima of variable quantities, and the doctrine is delivered in the same obvious manner as before; so that this difficult part of fluxions, which has so often proved the *ne plus ultra* to mathematical students, may be easily understood. In the fourth chapter, the manner of drawing tangents to curves is explained; in the fifth, that of finding the points of inflection, or of contrary flexure in curves: the sixth that of finding the radius of curvature; and the seventh that of finding the nature of an evolute of a given involute curve.—We shall only observe further, with regard to this first part, that the demonstrations of the rules for finding the fluxions of fluents, and the methods of drawing the general expressions for the sub-tangent, &c. are less liable to the objections of the author of the Analyst, than those in most other treatises of this nature.

The second, which is the most difficult part of the fluxionary calculus, namely, that of finding the fluent from the fluxion being given, is introduced with the doctrine of infinite series. And here the same plain and perspicuous method is followed, as in the first part: so that we are persuaded, a learner, after looking into Mr. Rowe's book, will find the doctrine of fluxions not so difficult to be attained, as is generally imagined.

It must not however be supposed, that the whole doctrine of the fluxionary calculus is delivered in this treatise; it is intended as an introduction only; but when the precepts it contains are well understood, the reader will find no difficulty in pursuing this study to a much greater length. Thus, for instance, the doctrine of second, third, &c. fluxions is omitted, as also the manner of finding the centers of gravity, percussion, and oscillation, with several other particulars of that nature.

The first edition was recommended to beginners in the Ladies' Diary for 1753. p. 46.

CRITICAL REVIEW for MAR. 1759.

An Introduction to the Doctrine of Fluxions. The second edition, with additions and alterations. By John Rowe. Octavo. Pr. 4s. 6d.

OF all the mathematical sciences, the doctrine of Fluxions being by far the most difficult to be learnt; and the treatises published on this excellent method of computation being delivered in too concise a manner to be easily understood by learners without the assistance of a master; so a plain and easy introduction was greatly wanted by the young mathematical students, for whose use the treatise before us is wholly designed.

The first edition of this introductory tract, containing 168* pages, was printed in the year 1751; and this second, which contains 249† pages, in 1757. The former appearing before the commencement of our Review, we should take no notice of the latter, if the alterations and additions were not so considerable, as in a manner to render it a new treatise.

In the preface, which is entirely new, the author celebrates the method of fluxions above the other mathematical sciences, and gives a short sketch of the controversy about the invention of it, between that prince of mathematicians and philosophers

* cuts 168 } 146.

† 249 } 213. the
cuts 36 }

the late Sir Isaac Newton, and the celebrated M. Leibnitz, justly determining it in favour of the former.

This second edition is divided into two parts: the first treats of the direct method of fluxions, and the second of the inverse method. At the end is added an appendix, containing seventeen miscellaneous questions, with their fluxional solutions.

The demonstrations of the rules for finding the fluxions of fluents are entirely new, and not liable to be objected to by any one who allows the possibility of quantities being generated by motion. The same may be said of the author's method for deriving the general expression for the subtangent to curves, the fluxion of the areas of curvilinear spaces, contents of solids, &c.

As the common books of geometry and algebra give not the descriptions, and from thence the deduction of the properties of some curves to be found in this treatise, nor the method of reducing algebraical quantities into infinite series, and the new way introduced by Dr. Wallis of noting their powers and roots, necessary to be used in all fluxional tracts; therefore, for the benefit of the learner, these deficiencies the author has thought proper to supply, though they do not immediately relate to the fluxional calculus.

As a certain and well known critic * has asserted, that the doctrine of second fluxions is not delivered in this treatise; we think it would be injustice in us not to observe on the contrary, that it is clearly explained, and applied to the determining the points of inflection, radii of curvature, and the nature of the evolutes of given involute curves.

The whole is delivered in as plain and intelligible a manner as the nature of the subject seems to admit of; and therefore we will venture to say, that this tract is the best calculated of any we have seen, to serve the end of a plain and easy introduction.

* See the Monthly Review for December last.

MONTHLY REVIEW, for JULY 1762.

Mathematics. With Eleven Copper-plates. By the late Rev. Mr. William West of Exeter. Revised by John Rowe. 3s. in boards. Richardson.

THIS small manual, of which every page shews the hand of a master, is a posthumous work; and is published for the benefit of the Author's widow, by the ingenious Mr. Rowe, who some years since obliged the world with *An Introduction to the Doctrine of Fluxions*. — The Editor informs us, that the present publication was selected from several mathematical papers, written at different times, few of which were finished, and none perhaps ever intended for public inspection.

The first five pages contain a short introduction to the fluxionary calculus; the following thirty-eight, respecting the application of that doctrine to the solution of problems *de maximis et minimis*; in which Mr. West has rendered that useful and difficult branch of the mathematics plainer, and more easy to be understood, than we remember to have seen it done by any other Writer; and, at the same time, has demonstrated, in a very elegant manner, the common method of making the fluxion of a maximum or minimum $= 0$.

The other part of this small performance consists of twenty-four miscellaneous questions, with their solutions: several of these are very curious, and the solutions neat and elegant.

CRITICAL REVIEW for AUG. 1762.

Mathematics. With Eleven Copper-Plates. By the late Rev. Mr. William West, of Exeter. Revised by John Rowe. 8vo. Pr. 3s. Richardson.

THIS little publication contains a variety of slight sketches, which distinguish the hand of a master, and deserve a place in the mathematical repositories of the curious, but scarce conduce to the advancement of geometry, or the instruction of the beginner: yet there is undoubtedly a large field for the exertion of genius, in the application of the doctrine of fluxions, to curve spaces of higher dimensions than the sections of the cone, expressing their areas exactly in numbers, and marking the fluent by the measure of ratios and angles; particulars not sufficiently attended to by the mathematicians of this age, which may be considered as essential *desiderata*, in one of the noblest discoveries of human genius. From the specimen of talents, exhibited by Mr. West in the introductory to the fluxionary calculus, the neat application of the doctrine to the solution of several curious problems, especially those *de maximis et minimis*, and that perspicuity of thought and expression displayed in the stating and operation, we have reason to lament he had not directed his talents to more important objects, and especially to those just specified. We cannot; however, avoid objecting to our author's method of inscribing the largest rectangular parallelogram in a given semicircle, as neither scientific nor easy,* because the proportional increase or decrease of the quantities, by no means obviously shews the proportion of the rectangle. Indeed, the inference made in the scholium, respecting the proof of the usual method of making the fluxion of a maximum = 0, is clearly deduced, and so far Mr. West deserves our thanks.

* *Prob. 8. — The Editor begs leave to differ in opinion from the Reviewer. J.R.*

MONTHLY REVIEW for MAY 1776.

Letters relative to Societies for the Benefit of Widows and of Age. Printed at Exeter, and sold by Johnson in London. 8vo. 1s. 1776.

These Letters were first printed in the *Gazetteer*, in 1767 and 1768. They are now *republished*, by Mr. John Rowe, (whose skill, in calculations of the nature here proposed, those who are acquainted with his treatise on *Fluxions* can have no reason to question,) and, as we apprehend, with a particular intention of conveying necessary caution to some Societies established in the city of Exeter and county of Devon. They form part of a plan which the Writer had proposed more largely to pursue; but his design was superseded by Dr. Price, in his accurate and useful *Observations on Reversionary Payments*: see a particular account of this excellent publication in the *Monthly Review*, vol. xlv*. We recommend the following extract from a Postscript, now subjoined to one of his letters by the Editor, to those of our Readers whom it may more immediately concern:

‘ If the annual payment made by the husband be 40s. and the first be at the time of his admission into the Society; then, the annuity to be paid to the widow, by *London* tables, should be 7l. 9s. but, by *country* tables, 7l. 14s.—Supposing interest 3 per cent. and the widow not to be entitled to the annuity if the husband die within five years after his being admitted a member. The Republisher of the Letters hopes serious attention will be given to this by the many Societies for the benefit of widows lately established throughout the kingdom in general; and by those in the city of Exeter and county of Devon in particular. He reflects on no one; but hopes, and believes, these Societies took their origin from motives truly laudable and good.—And he would hope and believe the same good motives will soon cause a reformation.

‘ These Societies, instead of 7l. 9s. or 7l. 14s. engage to pay the widow 20l.—What fatal consequences must such Societies in time produce!—Ought they not immediately to reform!’

* See also the *Critical Review* for Feb. 1772;—in which some of the Doctor's Observations are justly criticised and exposed. J.R.

LONDON REVIEW for JUNE 1776.

Letters relative to Societies for the Benefit of Widows and of Age.
8vo. 1s. Johnson.

The prevailing phrenzy for annuities, and the purchase of rever-
sionary payments having given rise to societies both in town and coun-
try; which engaged, on visionary calculations, to pay much more
than the admission money and annual subscriptions enable them to af-
ford; the author of these letters, had formed a plan for exposing the
fallacy of those institutions; in order to prevent the disappointment
that, in the end must inevitably fall on the annuitants. Dr. Price's
famous observations on the same subject rendering the prosecution of his
design needless, it was of course dropped; nor do we see the necessity
of the republication of this part of the plan, after the matter hath been
so fully treated by other writers. The ingenious editor, indeed, hath
annexed some remarks that, being applicable to particular societies,
deserve their particular attention. Some of these, he says, engage to
pay widows an annuity of twenty pounds; when by calculation they
can afford only to pay about seven pounds ten shillings. A wide dif-
ference! Surely, says he, such societies must in time produce fatal
consequences! Ought they not immediately to set about a refor-
mation?

The London Review was begun a. d. 1775.

CRITICAL REVIEW for OCT. 1776.

Letters relative to Societies for the Benefit of Widows and of Age.
8vo. 1s. Law.

In the preface the editor says, 'These Letters first appeared in the Gazetteer in the years 1767 and 1768. They are now republished together, at the instance of some gentlemen, by the author of N^o. 1, 5, 8, 11, 13, and 14.

'He hopes, N^o. 11 sufficiently shews his disapproving the method of treating the subject of annuities independent of the consideration of the interest of money. The fallacy of the method is, indeed, mathematically demonstrable. Some of these Letters, therefore, he cannot approve; though they could not, with propriety, but be inserted.

'The tables from which his calculations were made, are those of his late celebrated friend Mr. Simpson, in his *Select Exercises*, p. 254, et seq.

'At the time he quitted London, which was in May 1768, he did intend to write, at large, on the various societies then subsisting, for the benefit of widows and of age: but his very able friend, the reverend Dr. Price, having copiously, and with great judgment, handled these subjects, in his excellent treatise, first published in the year 1771; he, therefore, now declines his then general design.'

It seems the occasion of the first writing, &c. of these Letters was this. About the year 1765 or 1766, an attempt was made to establish a society of gentlemen of the law for the benefit of their widows; by making certain annual subscriptions towards the raising of a fund, from which, after their decease their widows were to be entitled to a certain annuity. After some progress made in this attempt, a reference was made to the editor by the gentlemen concerned, to enquire his opinion, whether the terms which they had proposed in their scheme were such as might be likely to fix it on a solid and lasting foundation. In answer to it, his report was such as presently induced the gentlemen to put an end to their scheme, as it then appeared impossible for it to be conducted on such principles. Some time after, the editor published a letter concerning this subject in a newspaper, with a view to caution or deter other gentlemen from going rashly into mistakes by forming ill founded schemes for the benefit of age or of widows, as might be likely to bring ruin or much distress on unwary people in the end. This paper was answered by others in the like way, which brought replies from him and several other gentlemen again, and so on alternately for some time.

It is very manifest that the editor and his party had much the better of the argument, as indeed was to be expected as they reasoned from strict mathematical principles founded upon long experience and due attention, while their opponents seem to know nothing of the true principles of this subject.

He

He has now published these several Letters together in a pamphlet with a view to their being of farther use to the public in future, and we wish that all who are concerned in such societies may pay a proper regard to it.

18 AP 68

